K. I. Sawyer Air Force Base

Size: 5,215 acres
Mission: Conducted long-range bombardment and air refueling operations
HRS Score: NA
IAG Status: None
Contaminants: Petroleum, pesticides, heavy metals, and solvents
Media Affected: Groundwater and soil
Funding to Date: $36.0 million
Estimated Cost to Completion (Completion Year): $23.6 million (FY2012)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY1999

Marquette, Michigan

Restoration Background

In July 1993, the BRAC Commission recommended closure of K.I. Sawyer Air Force Base, inactivation of the 410th Wing, and transfer of the base's B-52H aircraft to Barksdale Air Force Base, Louisiana. In FY95, the installation officially closed.

Environmental studies have been ongoing at the installation since FY84. Sites include landfills, fire training areas, underground storage tanks (UST), aboveground storage tank spill sites, drainage pits, and a drainage pond. Petroleum hydrocarbons, trichloroethene (TCE), tetrachloroethene, vinyl chloride, 4-methyl phenol, and heavy metals are the primary contaminants affecting soil and groundwater.

Interim Remedial Actions (IRA) conducted at the installation include removal and replacement of USTs; removal and cleanup of contaminated soil; installation of 14 groundwater extraction wells; construction of a groundwater treatment plant, which treats 1.5 million gallons of groundwater daily; and initiation of a fuel recovery system. In addition, an IRA was completed at a petroleum/oil/lubricant (POL) storage area to remove JP-4 jet fuel from groundwater, and pilot-scale bioventing systems were installed in the fire training area and the POL area.

The installation has completed Remedial Investigations (RI) at six sites and Feasibility Studies at four sites. The installation developed a basewide groundwater monitoring plan and RCRA closure plans for the Explosive Ordnance Disposal (EOD) Range and the Hazardous Waste Interim Storage Facility.

The installation completed its Environmental Baseline Survey in FY94. It identified approximately 393 acres as CERFA-clean and received regulatory concurrence on the designations. In FY95, the Local Redevelopment Authority submitted a reuse plan and began working with the Michigan Jobs Commission to coordinate the transfer of property at the installation to civilian use. In addition, the installation began leasing property and completed a redevelopment plan.

A restoration advisory board (RAB) was formed in FY94. The installation's BRAC cleanup team (BCT) schedules meetings immediately before RAB meetings, thereby facilitating communication between the two groups.

In FY96, the installation conducted fieldwork for an RI at one site and fieldwork for focused RIs at five sites. The first comprehensive RI for the basewide groundwater monitoring program was completed. Fieldwork for the RI and Remedial Action (RA) projects was completed at 16 areas of concern (AOC) and is ongoing at 91 additional areas.

The Central Heating Plant fuel supply system, which included two large aboveground storage tanks, was removed. Five large aboveground tanks were removed from the POL Yard, as was the aircraft hydrant refueling system, which consisted of 20 large USTs and distribution plumbing. Closure under RCRA was completed at one Battery Lime Pit, and corrective measures were completed at two Interim Status Hazardous Waste Storage Facilities. The EOD Range and a Grenade Range were cleared of ordnance residues, and two oil-water separators and 22 USTs were removed from the ranges. RA plans and Environmental Assessments were developed for four sites, and decision documents were completed for two fuel release sites. Closure under RCRA was conducted for Building 744 and the Defense Reutilization and Marketing Office (DRMO).

FY97 Restoration Progress

Investigation and cleanup of AOCs and two spill sites took place in FY97. The installation continued to remove USTs, oil-water separators, and aboveground storage tanks. In addition, the second round of the basewide groundwater monitoring program was completed along with the RA to cap Landfill 4. Geoprobes were used to take groundwater samples and measure groundwater elevation at Landfill Site 1. A bioventing IRA in the POL Yard also was implemented.

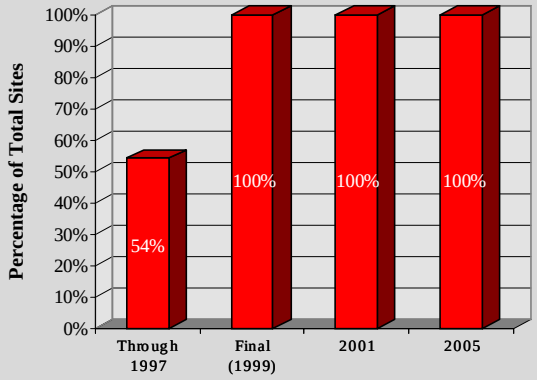
Improved tracking of investigation-derived waste and on-site management of change orders saved the installation time and money. Frequent teleconferencing on project issues and status ensured that programs remained on track. The BCT established decision pathways, consulted with technical experts, and reviewed cleanup decisions. The RAB continued to meet and participated in several site tours.

Data indicate that an aggressive and efficient free-product recovery system at the POL area is not possible. Therefore, this activity was not completed. A Remedial Action Plan and Environmental Assessment (RAP/EA) must be completed before the solution is agreed on. Closure of the EOD range was postponed to FY98 because high levels of metals were found at the site.

Plan of Action

- Complete closure of EOD Range in FY98
- Complete RAP/EAs at seven sites in FY98
- Prepare abstract of latest BRAC Cleanup Plan in FY98

Sites Achieving RIP or RC Per Fiscal Year



Size: 4,660 acres
Mission: Provide depot-level aircraft and engine repair
HRS Score: NA
IAG Status: None
Contaminants: Metals, VOCs, and SVOCs
Media Affected: Groundwater and soil
Funding to Date: $107.9 million
Estimated Cost to Completion (Completion Year): $138.2 million (FY2016)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2001

San Antonio, Texas

Restoration Background

In July 1995, the BRAC Commission recommended realignment of Kelly Air Force Base. As a result of this realignment, the Defense Distribution Depot, San Antonio, will be closed and the airfield and all associated support activities will be attached to Lackland Air Force Base in Texas. As of July 1995, the installation had focused its efforts on laying the groundwork for base closure.

Environmental investigations have identified 52 sites and several areas of interest on base, including landfills, spills from the industrial waste collection system, former fire training areas, possible low-level radioactive waste sites, underground storage tanks (UST), aircraft maintenance areas, sludge lagoons, and sludge-spreading beds. Sites are geographically separated into five zones: Zone 1 contains properties located west of Leon Creek, which are to be realigned to Lackland Air Force Base; Zone 2 contains property south and west of the runway; Zone 3 contains the present and former industrial operations area on the base; Zone 4 consists of the area off the main base known as east Kelly; and Zone 5 consists of the flightline, warehouses, and base administrative support operations. Most of Zone 5 is scheduled to be realigned to Lackland Air Force Base. Metals, volatile organic compounds, and semivolatile organic compounds have affected groundwater and soil at the installation and off-base groundwater.

A basewide groundwater and surface water monitoring program, known as the Basewide Remedial Assessment, began in FY94. This assessment provides an annual snapshot of groundwater conditions installationwide, both on and off base. By the end of FY95, final reports had been prepared for Remedial Investigation and Feasibility Study (RI/FS) phases for approximately 41 sites in Zones 1, 2, and 3. Approval from the state regulatory agency is still pending on some of these reports and associated decision documents.

The installation established partnerships with state and federal regulatory agencies and conducts document reviews through a BRAC cleanup team, which was formed in FY96. The first BRAC Cleanup Plan was issued in FY96. The installation worked with the city of San Antonio on preliminary construction plans for a stormwater culvert rerouting east of Zone 3. A draft groundwater compliance plan was prepared and is awaiting approval. Design and construction of additional interim remedial systems have been postponed, pending development of a strategy for implementing final actions at sites.

FY97 Restoration Progress

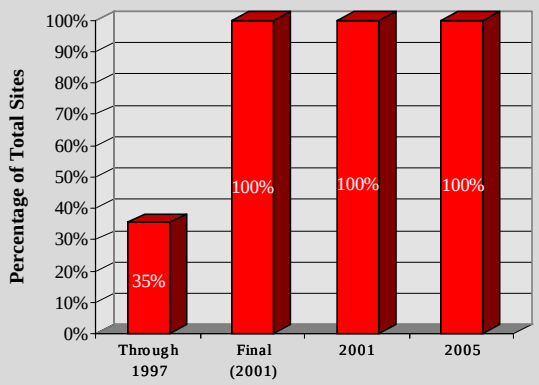
RI activities continued in Zones 4 and 5. Zone 3 and Zone 4 FS activities began in both zones, including a Focused FS for groundwater affected by Zone 4 and Zone 3 industrial activities. A site in Zone 4 was remediated, and the property was leased to private industry. A source area was discovered in Zone 3 at site MP, and investigative activities began in order to determine the source characteristics. Negotiation with the state regulatory agency continued on the Zone 1 FS. Final reports were submitted for regulatory review on the Zone 5 RI and the Zone 3 groundwater decision document.

The stormwater culvert project remained in the planning and design stage. A project was awarded for cleanup of soil in Zones 2 and 3 and implementation of final Remedial Actions (RA). An optimization project was initiated to review operating parameters and necessary upgrades for the existing groundwater extraction systems. Monitoring for natural attenuation parameters was completed. A partnering initiative with state and federal regulatory agencies began as an effort to expedite document reviews and the property transfer process in preparation for closure.

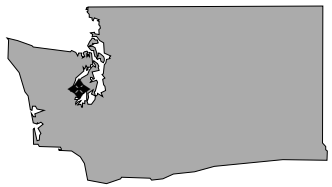
Plan of Action

- Continue RI/FS activities for Zone 4 and the FS for Zone 5, on and off base, in FY98
- Award a design contract for an interim final groundwater collection system in FY98
- Delineate off-base contamination from Zones 3 and 4 in FY98
- Continue investigation of the source area at Site MP and select RAs for the source area and downgradient plume in FY98
- In FY98, initiate optimization studies for long-term monitoring and long-term operations, including optimization of groundwater monitoring
- Perform additional field investigations in Zone 1 in FY98
- Complete final RAs for soil in Zones 2 and 3 in FY98

Sites Achieving RIP or RC Per Fiscal Year



Size: 340 acres
Mission: Test, prove, overhaul, and issue torpedoes
HRS Score: 32.61; placed on NPL in October 1989
IAG Status: Federal Facility Agreement signed in 1990
Contaminants: VOCs, heavy metals, petroleum hydrocarbons, herbicides, fuel, and pesticides
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $21.8 million
Estimated Cost to Completion (Completion Year): $38.5 million (FY2016)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2005



Keyport and Indian Island, Washington

Restoration Background

In September 1995, the BRAC Commission recommended realignment of this installation. The center's responsibility for maintaining combat system consoles and its general industrial workload will be moved to Puget Sound Naval Shipyard.

Operations at the installation, including plating, torpedo refurbishing, and disposal practices, contributed to contamination at the site. Since FY84, environmental investigations at the installation have identified several site types, including underground storage tanks, sumps, spill sites, a landfill, and an underground trench. Ongoing environmental investigations conducted under CERCLA have identified 12 sites.

In FY92, a Removal Action was completed at a chromate spill site. An underground trench and several sumps were excavated, and chromium-contaminated soil was removed and replaced with clean fill.

The installation completed Remedial Investigation and Feasibility Study (RI/FS) activities or Sites 2, 3, 5, 8, and 9 in FY93. Because of public concern about the Proposed Remedial Action Plan for Site 1, additional RI activities were initiated. Temporary buildings located above the landfill at Site 1 were vacated and removed as a precautionary measure.

In FY94, a Record of Decision (ROD) was signed for Operable Unit 2 (Sites 2, 3, 5, 8, and 9). The installation also completed interim corrective measures for Site 23. In FY95, the installation conducted a Phase I Removal Action at Site 8. At Site 23, a corrective action consisting of removal and closure in place continued for hazardous waste storage tanks and sumps.

A technical review committee (TRC) was formed in FY89 and was converted to a restoration advisory board (RAB) in FY95. A community relations plan (CRP) was completed in late FY90. The installation has prepared and distributed quarterly fact sheets and conducted a door-to-door community survey and several open houses and workshops. The RAB meets monthly and has participated in such activities as regional workshops, open houses, and production of community information publications.

To improve site management, regulatory agencies have been involved in developing the scope of work and documents. In addition, technical memorandums are prepared to convey issues before documents are made final. Concurrent document reviews also are conducted.

During FY96, the CRP was updated and the installation conducted additional groundwater, sediment, and tissue sampling and analysis at Site 1 and began long-term groundwater monitoring at Sites 2 and 8. In addition, the installation completed the confirmational groundwater sampling at Site 5, and groundwater and sediment sampling at Site 9, required under the ROD. Work plans for the Phase II soil removal were initiated at Site 8. Corrective measures, including removal of tanks and soil and in situ remediation of contaminated soil, were completed at Site 23.

FY97 Restoration Progress

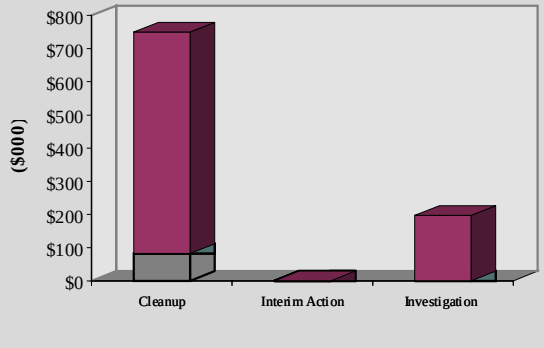
The installation continued groundwater monitoring at Sites 2 and 8. For Site 8, a Site Characterization and Analysis Penetrometer System of cone-penetrating radar and ground-penetrating radar was implemented. A Phase II soil removal was performed at the site. In addition, the installation is receiving input from the U.S. Geological Survey on groundwater flow modeling, degradation analysis, and tritium dating in support of natural attenuation at Site 1. The University of Washington is providing information on phytoremediation. The RAB, regulators, and technical experts are identifying technology alternatives for the Site 1 Focused Feasibility Study.

Increased involvement of the RAB and the community delayed some activities scheduled for FY97. Other activities were postponed because of funding constraints and risk priorities.

Plan of Action

- Continue groundwater monitoring at Sites 2 and 8 in FY98
- Complete the Phase II soil removal at Site 8 in FY98
- Complete the RI/FS and the Proposed Plan and sign the ROD for Site 1 in FY98
- Complete corrective action at Site 23 in FY00
- Complete Removal Action at all sites in FY00

FY98 Funding by Phase and Relative Risk



Lake City Army Ammunition Plant — Northwest Lagoon — NPL

Size: 3935 acres
Mission: Manufacture, store, and test small-arms munitions
HRS Score: 33.62; placed on NPL in July 1987
IAG Status: IAG signed in September 1989
Contaminants: Explosives, heavy metals, solvents, and petroleum/oil/lubricants
Media Affected: Groundwater and soil
Funding to Date: $43.5 million
Estimated Cost to Completion (Completion Year): $118.3 million (FY2028)
Final Remedy in Place or Response Complete Date: FY2006

Independence, Missouri

Restoration Background

Operations at the Lake City Army Ammunition Plant, a government-owned, contractor-operated facility, include the manufacture, storage, and testing of small-arms munitions. Principal site types at the installation include abandoned disposal pits, sumps, firing ranges, old lagoons, old dumps, and closed RCRA lagoons and burning grounds. Environmental studies initially identified 73 sites, which were consolidated into 35 sites for further investigation.

Sampling at seven representative areas identified groundwater contaminated with volatile organic compounds (VOC), explosives, and heavy metals. After the plant was placed on the National Priorities List (NPL), it conducted a Remedial Investigation and Feasibility Study (RI/FS). The RI/FS focused on four operable units (OU), including the Northeast Corner, Area 18, and Area 8 OUs, and an installationwide OU. Area 8 was subsequently incorporated into the installationwide OU.

In FY93, the installation drafted RI/FS Reports for the Area 18 OU and the Northeast Corner OU. In FY94, the installation revised the RIs for two OUs and completed the draft RI Report for the Area 8 and installationwide OUs. The installation completed Relative Risk Site Evaluations in FY94. After completing an Engineering Evaluation and Cost Analysis (EE/CA), an Action Memorandum, and design documents in FY95, the installation planned to conduct one Removal Action to construct and operate a groundwater extraction and treatment system in the Area 18 OU. Draft revisions to the Area 18 OU FS were completed in the same year. The draft FS Report for the Area 18 OU identified several innovative technologies for discussion with the regulatory agencies.

In FY95, to improve site management, the installation held quarterly meetings of project managers in conjunction with technical review committee (TRC) meetings.

In FY96, the installation began revising its community relations plan. In addition, the installation began converting the TRC into a restoration advisory board (RAB). The installation initiated a Removal Action at the Area 18 OU, with concurrent development of the final Record of Decision (ROD). The FS Report for the Area 18 OU was completed, and the Proposed Plan was submitted to the regulatory agencies. The installation and EPA subsequently began an informal dispute resolution process in order to obtain agreement on the Proposed Plan for the Area 18 OU.

Also, in FY96, the installation initiated Removal Actions for sumps, installationwide groundwater containment, and the capping and leachate collection system for the abandoned landfill in Area 16. The installation submitted a draft final FS for the Northeast Corner OU. A VOC groundwater plume discovered in the Northeast Corner OU may be migrating off site. In addition, the Army initiated Treatability Studies for dual-phase vapor extraction in the Area 18 OU and the Northeast Corner OU.

FY97 Restoration Progress

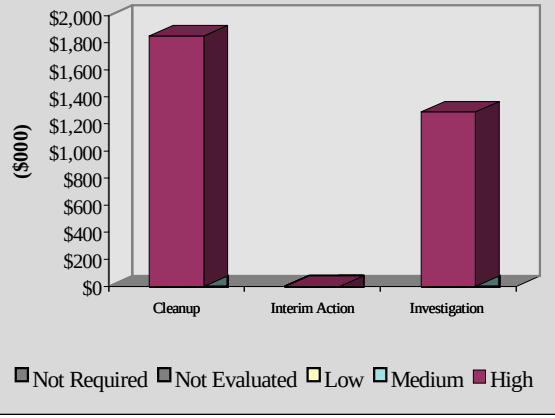
The installation completed the Area 18 pump-and-treat system. Use of innovative technologies helped expedite site characterization and fieldwork to determine the extent of off-base migration of the contaminant plume. The installation developed an EE/CA and an Action Memorandum for the leachate collection trench and a cap for the abandoned landfill in the Area 16/Northeast Corner OU. The Northeast Corner OU oil and solvent pits, which created the plume leading to the installation boundary, became a higher priority than the abandoned landfill. The Army is proceeding with an interim ROD to install a permeable reactive barrier in the Northeast Corner OU. The Army abandoned the Removal Action for the landfill and is incorporating the landfill's cleanup into the final Northeast Corner OU ROD.

A RAB was formed in March 1997. The local community, therefore, became better informed of the plant's Installation Restoration Progam activities and environmental problems. Many questions about plant operations and environmental issues were answered to the public's satisfaction. In addition, the U.S. Army Corps of Engineers assisted in document review, and issues with regulatory agencies were resolved through monthly program managers' meetings.

Plan of Action

- Complete Interim Action/Early Action Proposed Plan/ROD for the Northeast Corner in FY98
- Complete three Removal Actions (Well EW2, groundwater containment, and sump) in FY98-FY99
- Complete remaining RI/FS activities by FY99
- Complete RODs for Area 18 and Northeast Corner OUs and begin Removal Actions by FY99
- Complete all current Removal Actions by FY99
- Use phytoremediation and reactive walls to treat groundwater in FY99
- Complete the ROD for the installationwide OU and begin Remedial Action (RA) there by FY01
- Complete all RA activities by FY04

FY98 Funding by Phase and Relative Risk



Lakehurst Naval Air Engineering Station NPL

Size: 7,382 acres
Mission: Technology development and engineering
HRS Score: 50.53; placed on NPL in July 1987
IAG Status: Federal Facility Agreement signed in October 1989
Contaminants: Fuels, PCBs, solvents, and waste oils
Media Affected: Groundwater and soil
Funding to Date: $34.3 million
Estimated Cost to Completion (Completion Year): $46.2 million (FY2016)
Final Remedy in Place or Response Complete Date: FY1999

Lakehurst, New Jersey

Restoration Background

Historical operations at this installation involved handling, storage, and on-site disposal of hazardous substances. Records, aerial photographs, field inspections, and interviews identified 45 potentially contaminated sites. Investigation began in FY83, and the Remedial Investigation and Feasibility Study (RI/FS) was completed for all but one site by the end of FY95. Of the 45 sites, 33 require no further action.

Records of Decision (ROD) were signed in FY96 and FY97 to continue groundwater treatment systems at Areas A/B, C, E, and H. An Interim ROD for a 3-year pilot project for natural restoration at Areas I and J was signed in FY95; the pilot project began in FY96.

Removal Actions were conducted at 23 sites to remove contaminated soil, drums, tanks, and debris. Innovative technologies have been implemented, including soil washing, asphalt batching, and solar-powered spray irrigation and sparge treatment systems. Passive soil gas surveys were used to identify the most contaminated areas in a closed landfill and the extent of petroleum contamination in a wetland. In FY93, the installation developed in-house expertise in groundwater modeling. The modeling supported and built consensus for use of natural attenuation as the proposed action for a large trichloroethene (TCE) plume. The cost of this method is less than 1 percent the cost of a pump-and-treat system.

Partnerships with the U.S. Geological Survey (USGS), Rutgers University, the New Jersey Department of Environmental Protection (NJDEP), and the Pinelands Commission have been established to study the use of composted biosolids for capping or for fill material.

In FY87, the installation established a technical review committee which meets to discuss the status of National Priorities List (NPL) sites. A restoration advisory board (RAB) was also formed. The RAB solicits public involvement through the local newspaper and poster displays.

In FY96, Remedial Designs (RD) were completed for upgrades of the installation's four pump-and-treat systems and RODs were completed for continued treatment of groundwater and soil in Areas C and H. FSs for Areas A/B, E, and K also were completed. A soil vapor extraction system began operating at Site 13, and soil bioventing/vapor extraction systems began operating at Sites 16 and 17.

FY97 Restoration Progress

Groundwater is being treated by pump-and-treat systems, spray irrigation treatment, and free-product extraction. RODs for Areas A/B, E, and K were signed, and final RDs for Areas A/B and E were completed. In-house staff prepare documentation and pursue completion of Federal Facility Agreement schedule requirements. Cost-saving techniques, including in-house data interpretation and reporting for groundwater pump-and-treat systems and vapor extraction/bioventing systems, reduced contractor costs by $185,000. Negotiated reduction of monitoring for the pump-and-treat systems from quarterly to semiannually will save up to $150,000 per year.

Accelerated fieldwork techniques were implemented, including excavation and restoration of petroleum hydrocarbon-contaminated wetlands. The installation created an aeration system and a surface water reservoir to treat groundwater and irrigate the station's golf course.

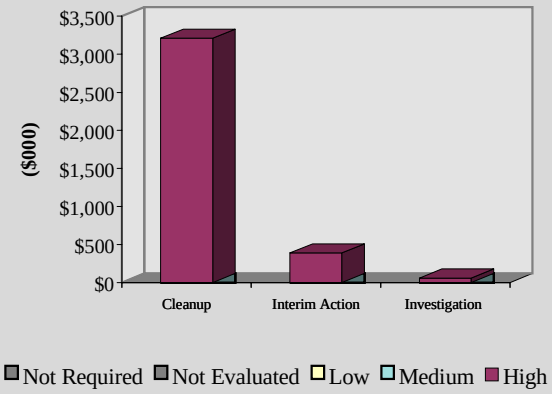
The site manager is in constant communication with regulatory agencies about modifications to reports. An ongoing partnership between the station, USGS, and NJDEP is studying revegitation of mined sites through use of composted biosolids.

Some activities scheduled for completion in FY97 were delayed because of contractual delays.

Plan of Action

- Modify groundwater treatment systems at Areas C and H in FY98
- Complete final FS for Areas I and J in FY98
- Complete design and construction of the groundwater treatment system at Area K in FY98
- Modify recovery systems at existing pump-and-treat systems in FY98 to accelerate remediation
- In early FY98, install additional treatment systems at groundwater contamination areas to accelerate attainment of applicable or relevant and appropriate requirements
- Modify pump sizing and injection systems at Sites 16 and 17 in FY98
- In FY98, modify treatment processes at Site 13 to include extraction as well as injection
- Sign final ROD for Areas I and J in FY99

FY98 Funding by Phase and Relative Risk

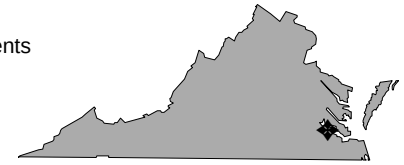


Langley Air Force Base

Including NASA Langley Research Center

NPL

Size: 3,152 acres
Mission: House Air Combat Command Headquarters, 1st Fighter Wing, 74th Tactical Control Facility, 480th Reconnaissance Technical Group, and NASA Langley Research Center
HRS Score: 50.00; placed on NPL in May 1994
IAG Status: Federal Facility Agreement under negotiation
Contaminants: Petroleum products, chlordane, PCBs, heavy metals, and solvents
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $41.7 million
Estimated Cost to Completion (Completion Year): $44.3 million (FY2005)
Final Remedy in Place or Response Complete Date: FY2001



Hampton, Virginia

Restoration Background

The installation includes Langley Air Force Base and the NASA Langley Research Center. This base, which has been an airfield and an aeronautical research center since 1917, is the home base of the First Tactical Fighter Wing. NASA Langley Research Center conducts some 270 operations and operates various wind tunnels for research and development efforts.

A FY81 Preliminary Assessment and Site Inspection (SI) and additional studies identified 45 sites at the installation. Site types include landfills, underground storage tanks (UST), a bulk fuel distribution system, and storm sewers. Additional investigations have determined that contaminants are migrating into Tabb Creek, the Back River, and ultimately the Chesapeake Bay. The most significant sites include landfills adjacent to Tabb Creek and a storm sewer that discharges into the Back River.

In FY85, the installation discovered additional fuel contamination and free-product plumes. Subsequently, the installation replaced the fuel distribution system, investigated contaminated sediment in the storm sewers, and conducted Removal Actions to address free product at eight sites. Corrective action plans for the eight petroleum-contaminated sites have been completed, and USTs at those sites have been removed. Removal Actions to remediate soil and groundwater have been initiated at three other sites. Additional actions at the sites included removal of abandoned USTs and free product and installation of a treatment plant to remove emulsified fuel from groundwater.

In FY93, the installation began SIs at 33 sites, Remedial Action (RA) construction at six sites, and construction of a second groundwater treatment plant to remove a plume of free petroleum product at two sites. In FY94, NASA removed about 600 cubic yards of contaminated sediment from a portion of its storm sewers.

In FY95, the installation completed construction of a second groundwater extraction and treatment system for petroleum-contaminated groundwater at two sites. A soil vapor extraction system also was implemented to remediate petroleum-contaminated soil near a filling station. A pilot-scale test using laser-induced fluorescence was conducted to identify and delineate a plume of petroleum-contaminated groundwater.

During FY96, Remedial Investigations (RI) were initiated at 13 sites. Time was saved by conducting scoping efforts with regulatory agencies and by implementing fieldwork under approved portions of the work plan while the final work plan was being prepared. Also during FY96, the installation completed SI activities at 33 sites and Removal Actions at two sites. It continued operation and maintenance (O&M) of the groundwater extraction and treatment system for petroleum-contaminated groundwater at two sites. The operation of the second groundwater treatment plant was discontinued in the spring.

In FY95, the installation's restoration advisory board (RAB) participated in the Variable Oversight Initiative, part of a national initiative by EPA and the state regulatory agency to streamline the regulatory review process. The initiative involved formation of the Langley AFB Partnership to improve communication and to set cleanup priorities. The partnership included EPA Region 3; the Virginia Department of Environmental Quality; the U.S. Army Corps of Engineers, Omaha Division; and the primary contractor involved in cleanup activities at the installation.

FY97 Restoration Progress

The installation implemented Removal Actions at three sites and continued O&M of the groundwater treatment plant.

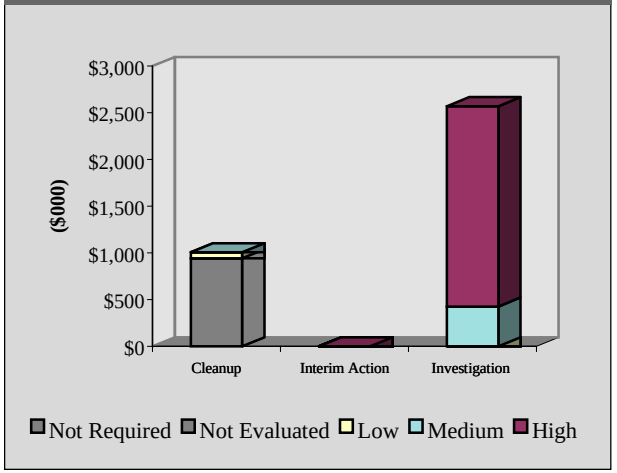
Site management techniques were improved by implementing a streamlined oversight and partnering process. In one case, this process reduced the magnitude of the interim Removal Action at Site OT-06 by removing the exposure pathway (a playground) instead of removing the contaminated soil. In addition, to gain regulatory concurrence, the installation developed a consensus on the closure process for pre-RI/Feasibility Studies (FS) sites. The Langley RAB completed updating its community relations plan with community interviews.

Some activities scheduled for FY97 have been pushed back to FY98 or FY99. Completion of the Federal Facility Agreement (FFA) was delayed because EPA withdrew from the negotiated agreement. A ROD for one site was delayed because additional work was required, and a ROD for a second site was delayed by a lack of technical review resources at EPA.

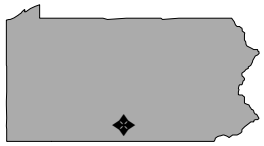
Plan of Action

- In FY98, continue use of streamlined oversight tools to reach decisions on sites
- Sign the FFA in FY98
- Sign two Records of Decision (ROD) in FY99
- Close out seven sites in FY99

FY98 Funding by Phase and Relative Risk



Size: 19,243 acres
Mission: Store, maintain, and decommission ammunition; rebuild and store tracked and wheeled vehicles; rebuild, store, and maintain missiles; provide warehousing and bulk storage
HRS Score: 34.21 (Southeastern Area); placed on NPL in July 1987
37.51 (Property Disposal Office); placed on NPL in March 1989
IAG Status: IAG signed in February 1989
Contaminants: VOCs, petroleum/oil/lubricants, PCBs, heavy metals, explosives, and asbestos
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $78.3 million
Estimated Cost to Completion (Completion Year): $182.3 million (FY2030)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2003



Franklin County, Pennsylvania

Restoration Background

Letterkenny Army Depot contains a variety of contaminated sites, including disposal lagoons and trenches, oil burn pits, an open burning and open detonation area, an explosives washout plant, two scrap yards, landfills, industrial wastewater treatment plant lagoons, and industrial wastewater sewer lines. Two National Priorities List (NPL) sites are located in the southern part of the installation.

The installation has concentrated its remedial efforts on source removal. Removals have included excavation, low-temperature thermal treatment (an innovative technology), backfilling, and capping of soil in the industrial wastewater treatment plant lagoons and the three K-Areas; emergency repairs to leaking industrial wastewater sewers; removal of the Property Disposal Office (PDO) fire training pit; and emergency removal of playground soil at the PDO Area and of sediment contaminated with polychlorinated biphenyls (PCB) in the springhouse at Rocky Spring. In FY91, the installation completed Site Inspection fieldwork for the Ammunition Area and signed a Record of Decision (ROD) for no further action for PDO Operable Unit (OU) 1. Remedial Investigation and Feasibility Study (RI/FS) activities were expanded to seven OUs in the Southeastern Area and five OUs in the PDO Area.

In FY94, the Army completed the RI/FS for volatile organic compound (VOC)-contaminated groundwater at PDO OU2. In addition, RI fieldwork began at the Mercury Detections in Rocky Spring Lake and at five OUs in the Southeastern Area. The installation also initiated an off-site dye study to identify migration pathways of contaminants from sources in the Southeastern Area to groundwater and surface water.

During FY95, the Army upgraded the existing groundwater extraction and treatment system. The rehabilitation of existing wells and the addition of a recovery well have more than doubled the system's extractive capacity. The installation completed a Remedial Action (RA) in the K-Area portion of the installation's Disposal Area, treating about 14,000 cubic yards of VOC-contaminated soil through use of low-temperature thermal desorption. In addition, a draft final ROD was prepared for enhanced passive aeration of the groundwater at PDO OU2.

In FY96, the Army established a BRAC cleanup team (BCT) to facilitate restoration. The community formed a Local Redevelopment Authority (LRA), and the commander established a restoration advisory board. The design of the off-site treatment plant at Rowe Spring was completed.

The installation began removal of contaminated sediment from Rowe Run and Conococheague drainage sites, emergency delineation and RA at the old PDO Burn Pit, and delineation of contaminated soil at the spill area in Area A of PDO OU5. It also performed additional RI fieldwork for PDO OU5 and completed Phase I of the Environmental Baseline Survey (EBS).

FY97 Restoration Progress

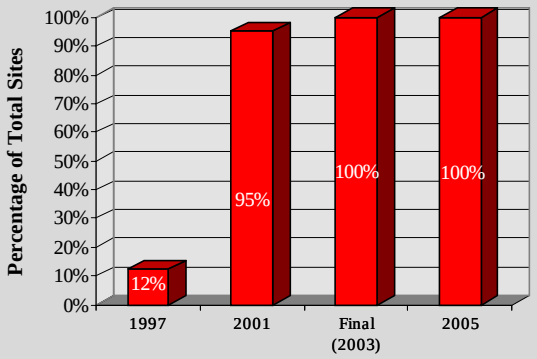
The installation completed four Removal Actions at Rowe Run Drainageway, Conococheague, industrial wastewater sewers, and the spill site in Area A. The installation used in situ hydrogen peroxide injection for chlorinated solvent-contaminated soil at the former Oil Burn Pit. A site cleanup also was completed at the Open Truck Storage Area. The BCT developed sample-screening protocols to expedite property transfer. A Removal Action at the former PDO Oil Burn Pit and a finding of suitability to lease for eight buildings were completed.

The base met regularly with EPA, Pennsylvania Department of Environmental Protection, the LRA, and Letterkenny officials. The BCT completed the BRAC Cleanup Plan (BCP), the CERFA letter report, a sample-screening protocol for open vehicle storage parcels and railroad tracks, and the BCP abstract. Investigative fieldwork began for PDO OU6 and Southeastern Area OU8.

Plan of Action

- Complete Phase II of the EBS in FY98
- Complete the second version of the BCP in FY98
- Finish RIs of Rowe Run and Conococheague drainageways, Areas A and B, and industrial sewers in FY98
- Begin construction of Rowe Spring treatment plant in FY98
- Complete construction of the off-post treatment plant at Rowe Spring in FY99
- Complete investigative fieldwork for PDO OU6 and Southeastern Area OU8 in FY98
- Prepare finding of suitability to transfer for Phase I property transfers in FY98
- Complete Environmental Assessment for BRAC Realignment Action in FY98
- Complete Focused Feasibility Study for Southeastern Area OU3 Disposal Area and Southwest Industrial Area groundwater in FY98

Sites Achieving RIP or RC per Fiscal Year



Lexington Facility–Lexington-Bluegrass Army Depot — BRAC 1988

Size: 780 acres
Mission: Conducted light industrial operations, including paint stripping, metal plating, etching, and anodizing operations
HRS Score: NA
IAG Status: None
Contaminants: VOCs, SVOCs, heavy metals, PCBs, pesticides, herbicides, and asbestos
Media Affected: Groundwater, surface water, sediment and soil
Funding to Date: $23.5 million
Estimated Cost to Completion (Completion Year): $29.3 million (FY2028)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2000

Lexington, Kentucky

Restoration Background

In December 1988, the BRAC Commission recommended closure of the Lexington Facility–Lexington-Bluegrass Army Depot (LBAD). In FY90 the Army began environmental studies that identified 67 sites requiring further investigation. Recommended actions included additional soil, groundwater, and underground storage tank (UST) investigations. A RCRA Facility Assessment (RFA), also conducted in FY90, identified 30 solid waste management units (SWMU) and two areas of concern (AOC).

On the basis of the RFA findings, the Army began fieldwork for a RCRA Facility Investigation (RFI) and a corrective measures study (CMS) in FY90. The initial Phase I RFI effort and the draft CMS documents were completed in FY93. Sampling data from the initial phase of the RFI indicated contaminated groundwater, soil, and sediment at 29 sites. The major AOCs were as follows: the new landfill, the industrial and sanitary waste disposal landfill, the old landfill, industrial waste lagoons, industrial wastewater treatment plants (IWTP), Area A, Area B, the north end of Building 135, and groundwater. Initial results of the Phase I groundwater investigation demonstrated the need for soil cleanup and increased the potential for long-term groundwater treatment. In 1994, the Kentucky Department for Environmental Protection (KDEP) issued a Corrective Action Order for LBAD.

In FY94, the installation formed a BRAC cleanup team (BCT); its members include the installation's BRAC environmental coordinator and representatives of EPA and KDEP. The installation completed a draft Environmental Baseline Survey and a BRAC Cleanup Plan. In addition, the Army signed an interim lease with the Commonwealth of Kentucky for the entire 780 excess acres.

The installation completed the final Phase I RFI, the CMS, and the groundwater investigation documents in FY95 and submitted them to the Army and regulatory agencies for approval.

During FY95, the installation removed USTs, contaminated soil, PCB-contaminated transformers, and asbestos. A finding of suitability to transfer (FOST) was signed for 22 buildings and a parking lot. The Army transferred the 22 buildings and the parking lot to the Commonwealth of Kentucky in 1995, and the installation closed as scheduled.

In FY96, the installation continued work on several Interim Actions. The groundwater investigation continued. Cleanup of the IWTP, Washrack 1, and the oil-water separator at Buildings 8 and 19 began. The installation completed Interim Remedial Actions for Area A, Area B, and the Coal Pile Run-Off Area.

FY97 Restoration Progress

The installation completed the removal of contaminated soil and sludge from the industrial waste lagoons. Early actions took place at the sump and sand filter at Building 139 and at the oil-water separator at Buildings 8, 10, 19, and 43. The installation improved site management techniques in FY97 by developing work plans for small sites during BCT meetings. In addition, to expedite site characterization and to ensure consensus on the work plan, the installation worked with the regulator before sampling was conducted.

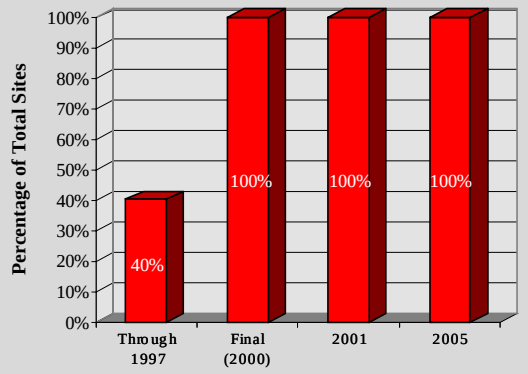
In FY97, EPA and KDEP concurred with the Phase I RFI and CMS documents. The installation began the Phase II RFI and CMS. A Phase II installationwide groundwater investigation (RFI/CMS) and Removal Actions at the industrial waste lagoons were completed. The Army signed a FOST for the Phase II transfer of 78 buildings and structures. Interim measure work plans, which had been prepared for a number of SWMUs, also were forwarded to KDEP and EPA for approval. The Army capped three landfills; excavated contaminated soil from the lagoons, Area A, Area B, and IWTP; and conducted Remedial Actions (RA) at other AOCs.

The second, fourth, and sixth activities in the current Plan of Action were not completed in FY97 as scheduled because of delayed regulatory reviews.

Plan of Action

- Complete Phase II transfer to the Commonwealth of Kentucky in FY98
- Complete the RA for the affected areas (Area A, Area B, and the Coal Pile Run-Off Area) in FY98
- Draft the Phase II RFI in FY98 and complete Phase II RFI activities in FY99
- Complete the investigation of groundwater contamination in FY99
- Draft and complete Phase II CMS in FY99
- Start cleanup of Building 135 in FY99
- Complete cleanup of old wastewater treatment plant in FY00
- If required, design and install a groundwater monitoring system in FY00
- Complete all BRAC activities, including monitoring, by FY10

Sites Achieving RIP or RC Per Fiscal Year



Lone Star Army Ammunition Plant NPL

Size: 15,546 acres
Mission: Load, assemble, and pack ammunition
HRS Score: 31.85; placed on NPL in July 1987
IAG Status: IAG signed in September 1990
Contaminants: VOCs, petroleum, heavy metals, and explosives
Media Affected: Groundwater and soil
Funding to Date: $16.5 million
Estimated Cost to Completion (Completion Year): $21.1 million (FY2004)
Final Remedy in Place or Response Complete Date: FY2004

Texarkana, Texas

Restoration Background

Lone Star Army Ammunition Plant loads and packs munitions. From 1943 to 1944, the Old Demolition Area (ODA) was used to destroy faulty or nonstandard explosives. Environmental studies revealed explosives and metal contamination in the ODA. EPA therefore placed that area on the National Priorities List (NPL) in July 1987. The ODA is the only CERCLA site at the installation.

Other RCRA sites investigated include surface impoundments, landfills, fuel storage areas, and load lines. Investigations revealed soil contamination with solvents, metals, and explosives at some sites. At one site, groundwater is contaminated.

Interim Actions undertaken by the installation include closing two surface impoundments, installing industrial treatment facilities to treat wastewater before discharging it, and removing the bulk fuel storage area and the service station.

In FY92, the installation began a RCRA Facility Investigation (RFI) for RCRA corrective action sites and completed a corrective action at one underground storage tank site.

In FY94, the installation used rotosonic drilling, an innovative technique, during additional EPA- and state-required field investigations of the ODA. This technique enhanced the quality of the core samples recovered, which, in turn, aided the installation in negotiations with regulatory agencies on Phase IV of the Remedial Investigation (RI). In addition, the University of Texas conducted a biodegradation study of installation soil that was contaminated with explosives and metals.

In FY95, the installation continued the Phase IV RI for the ODA by conducting soil boring and installing monitoring wells, accompanied by analytical sampling. The installation also obtained regulatory approval for, and began, sampling of biota at the ODA. The installation conducted groundwater investigations under RCRA at the two closed surface impoundments and performed soil and groundwater investigations at the bulk fuel storage area.

In FY96, the Army collected samples of groundwater and surface soil at the ODA in accordance with plans approved by EPA. RI activities were completed in the area. The installation took soil borings and established groundwater wells for the RFI. It also completed a draft survey to determine ambient concentrations of contaminants for the entire installation.

The installation's technical review committee (TRC) includes representatives of the installation, the state, and EPA and leaders of the local community. The TRC meets quarterly to discuss current and proposed environmental actions under CERCLA.

FY97 Restoration Progress

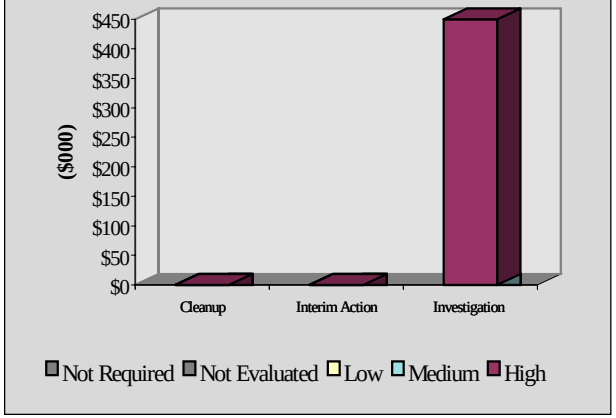
The Army completed a background survey to determine ambient concentrations of contaminants. The survey report was submitted to the state after completion of all field activities. The state approved the report in September 1997.

Underestimation of the activities required to complete work at newly discovered solid waste management units (SWMU) delayed completion of ongoing RFI activities.

Plan of Action

- Complete ongoing RFI activities, including activities at newly discovered SWMUs, in FY98
- Complete a Record of Decision for the ODA in FY98
- Decontaminate and remove cisterns in FY98
- Excavate contaminated soil at Paint Filter Site and RDX Pit K-2 in FY98
- Implement natural attenuation technologies in FY98
- Complete two Relative Risk Site Evaluations by April 1998
- Remove ordnance debris and institute erosion control measures at ODA in FY99

FY98 Funding by Phase and Relative Risk



Long Beach Naval Complex

BRAC 1991

Size: 1417 acres

Mission: Provide logistics support for assigned ships and service craft; perform authorized work in connection with construction, alteration, dry docking, and outfitting of ships and craft assigned; perform manufacturing, research, development, and test work

HRS Score: NA

IAG Status: None

Contaminants: Chlorinated solvents, solvents, acids, blasting grit, paint, heavy metals, industrial wastewater, and industrial liquid waste

Media Affected: Groundwater, surface water, sediment, and soil

Funding to Date: $40.7 million

Estimated Cost to Completion (Completion Year): $81.7 million (FY2006)

Final Remedy In Place or Response Complete Date for BRAC Sites: FY2006

Long Beach, California

Restoration Background

The Long Beach Naval Complex consists of the Long Beach Naval Shipyard (NSY), the Naval Station (NS) Long Beach, and the Long Beach Naval Hospital (NAVHOSP). The BRAC Commission recommended closure of the NAVHOSP, the NS, and associated housing areas in FY91, and closure occurred in FY94. Closure of the NSY and associated housing areas was recommended in July 1993, and occurred in September 1997.

NSY and NS operations that contributed to contamination include ship and vehicle repair and maintenance, utility maintenance and operation, support shops, storage of petroleum products and hazardous materials, laundry and dry-cleaning, steam plant operations, and air compressor operations. Portions of housing areas associated with the NSY were used to dispose of ship wastes, drilling mud, and construction debris. The primary sites of concern are disposal pits into which a variety of wastes were deposited.

The installation is investigating the NSY, NS, and related housing areas. A Removal Site Evaluation was completed at NS Site 6A to support an interim lease to the port of Los Angeles. It concluded that no action was necessary for industrial use of the site. The most difficult cleanup challenge occurred at Site 7, the NS and NSY harbor. To streamline the study process, Phases I and II of the Remedial Investigation and Feasibility Study (RI/FS) were combined.

In FY94, the installation formed a BRAC cleanup team (BCT), which completed the BRAC Cleanup Plan (BCP) and the Environmental Baseline Survey (EBS) for NS and NAVHOSP in FY94. The joint NS and NSY technical review committee was formed in FY92 and converted to a restoration advisory board (RAB) in FY94. A separate RAB for the San Pedro housing area and the Defense Fuel Support Point (DFSP) (an adjacent facility) was formed in FY95.

In FY96, the city of Long Beach completed the land reuse plan for NSY. The installation completed the RI for NS Sites 1 through 6A and the Engineering Evaluation and Cost Analysis (EE/CA) and Action Memorandum for NS Site 3. The removal of arsenic-contaminated soil from Site 3 also was completed. At the former NS gas station, the installation began operating a soil vapor and liquid extraction and bioremediation system to clean up petroleum contaminants in soil and groundwater.

FY97 Restoration Progress

The installation began an Interim Remedial Action (IRA) at Sites 2, 11, 12 (Palos Verdes housing), and 5 (San Pedro housing). Groundwater investigation for Site 6A began, and cleanup for Site 6B NSY was completed in August. EE/CAs for four sites and an EBS for NSY housing were finished. NSY was closed, and an EBS was written for NS.

To expedite document review, workshops were held and regulators were given sampling results from the laboratories, as well as advance information reports. The process of delineating contamination was enhanced by streamlined sampling and combining phases.

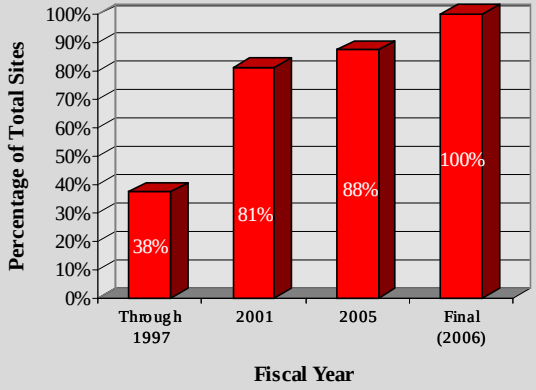
RAB activities included document review, comments on Remedial Action alternatives, and site tours and workshops for the community. A partnering agreement is under development among BCT and project team members. The BCT completed the latest BCP in March.

Some activities scheduled for completion in FY97 were delayed because of funding reductions.

Plan of Action

- Complete the RI/FS for NSY Sites 8 through 13 in FY98
- Complete an IRA at four sites and an SI for Site 14 in FY98
- Implement phytoremediation for Sites 1 and 2 in FY98
- Complete the FS for Sites 3 to 6A in FY98 and the Record of Decision (ROD) in FY99
- Complete the IRA for Sites 1 and 2 in FY98, the FS in FY00, and the ROD in FY01
- Sign the ROD for NSY Sites 8 through 13 in FY99
- Complete the RI/FS for Site 7 in FY99 and sign the ROD in FY00

Sites Achieving RIP or RC Per Fiscal Year



Longhorn Army Ammunition Plant NPL

Size: 8,493 acres
Mission: Load, assemble, and pack pyrotechnical and illuminating signal munitions and solid-propellant rocket motors
HRS Score: 39.83; placed on NPL in August 1990
IAG Status: IAG signed in October 1991
Contaminants: Explosives, heavy metals, and VOCs
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $57.9 million
Estimated Cost to Completion (Completion Year): $84.3 million (FY2006)
Final Remedy in Place or Response Complete Date: FY2006

Karnack, Texas

Restoration Background

Longhorn Army Ammunition Plant (LHAAP) manufactured pyrotechnical and illuminating signal munitions and solid-propellant rocket motors. Environmental studies have identified 50 sites, including storage areas, landfills, open burning grounds, industrial areas, burial pits, sumps, and wastewater treatment plants. Eighteen of these sites are being dealt with under the Installation Restoration Program (IRP) process and are listed on EPA reports for LHAAP. The installation divided the sites into five groups.

Follow-up studies conducted at the installation identified volatile organic compounds (VOC), heavy metals, and explosives in on-site groundwater, surface water, and soil. The studies also confirmed two sources of VOC contamination beneath the Active Burning Ground Site.

A FY84 Remedial Action (RA) included design and construction of a landfill cap for an unlined evaporation pond formerly known as the Rocket Motor Washout Pond. In FY91, the installation began a Remedial Investigation and Feasibility Study (RI/FS) at 13 sites. Phase I of the RI was completed in FY93. Phase II investigations at 11 sites that required additional fieldwork activities were completed in FY95.

In FY94, the Army also completed a pilot-scale study for an Interim Remedial Action (IRA) at Burning Ground No. 3, which includes the capped, unlined evaporation pond. The pilot-scale study consisted of groundwater extraction and treatment to remove trichloroethene (TCE) and methylene chloride, combined with low-temperature thermal destruction of soil and source material.

During FY95, the installation completed three Records of Decision (ROD), one for Burning Ground No. 3, another for two landfills, and a third for two sites at which no further action was necessary.

The installation's technical review committee (TRC), which meets quarterly, includes representatives of the installation, the Army, EPA, the Texas Natural Resources Conservation Commission, the local government, and environmental interest groups. The TRC solicits comment from the community about restoration activities at the installation. The commander attempted to form a restoration advisory board (RAB), but interest was not sufficient to sustain the effort. The Interagency Agreement (IAG) for the installation requires that both state and federal regulatory agencies review primary documents to ensure compliance. Partnering sessions have been advantageous in completing the review cycle.

In FY96, construction began on the Burning Ground Treatment Facility and the caps for Landfills 12 and 16. The installation completed Phase II RI investigations. It also began evaluating alternatives to pumping and treating the groundwater at Site 16. An RA began for 84 wastewater sumps.

FY97 Restoration Progress

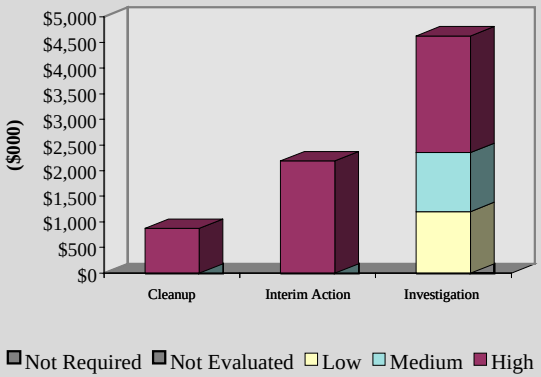
The installation compiled data to complete the Group 1 RI and initiated Phase III of the RI for Group 2. It also completed construction of the Burning Ground Treatment Facility and began treatment of groundwater and soil. Completion of the cap on Landfill 12 was delayed because of weather conditions but will be completed in early FY98. A Site Inspection report for Group 5 recommended no further action at two of the four sites. In addition, four Interim Actions or Removal Actions were initiated in FY97.

The Army improved site management and document review through concurrent review of primary documents with regulators. The TRC began including Audubon Society members at monthly managers' meetings.

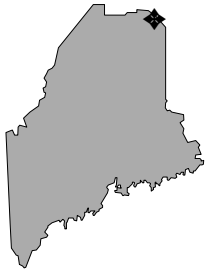
Plan of Action

- Sign ROD for no further action for Group 1 in FY98
- Continue treating groundwater and soil at the Burning Ground Treatment Facility in FY98
- Complete treatment of soil at the Burning Ground Treatment Facility in FY98
- Initiate Group 2 and Group 4 RI/FS studies
- Complete RI/FS for Landfill 16 in FY98
- Submit a no-further-action ROD for four sites (Group 1) in FY98

FY98 Funding by Phase and Relative Risk



Size: 9,477 acres
Mission: Support B-52 bombers and KC-135 tankers
HRS Score: 34.49; placed on NPL in February 1990
IAG Status: Federal Facility Agreement signed in April 1991; revision signed in 1994
Contaminants: VOCs, waste fuels, oils, spent solvents, PCBs, pesticides, and heavy metals
Media Affected: Groundwater and soil
Funding to Date: $101.1 million
Estimated Cost to Completion (Completion Year): $63.2 million (FY2035)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2000



Limestone, Maine

Restoration Background

Loring Air Force Base was established in 1952 to support B-52 bombers and KC-135 tankers. In July 1991, the BRAC Commission recommended closure of the base.

Wastes generated at the installation include waste oils, fuels cleaned from aircraft and vehicles, spent solvents containing volatile organic compounds (VOC), pesticides, polychlorinated biphenyls (PCB), and heavy metals. The Flightline and Nose Dock Areas, where industrial shops and maintenance hangars were located, are the primary areas at which wastes were released into soil and groundwater.

Environmental studies have been ongoing at the base since FY84. Sites include spill areas, landfills, fire training areas, underground storage tanks (UST), aboveground storage tanks, and low-level radioactive waste areas. In FY93, the sites were grouped into 13 operable units (OU).

Interim Remedial Actions initiated in FY93 included removal of free product at three sites, source removal at two sites, and Treatability Studies of bioventing at one site and of solvent extraction at another site. In FY94, Remedial Actions (RA) were completed for two OUs. This effort remediated four sites, with a total of approximately 7 acres of solvent-contaminated, fuel-contaminated, and PCB-contaminated soil.

An Environmental Baseline Survey identified 4,746 acres as CERFA-clean, and the installation received regulatory concurrence on the designations. About 6,340 acres are available for transfer. A BRAC cleanup team (BCT) and a restoration advisory board (RAB) were formed in FY94.

In FY95, Interim Actions consistent with the final remedy were completed at six sites and initiated at another six. A pilot study for recovery of fuels from bedrock was begun. The installation, regulatory agencies, the U.S. Geological Survey, and the Air Force Center for Environmental Excellence supported and helped implement a pilot study at the fire training area. In addition, the Maine Department of Environmental Protection (MDEP) entered into partnership with the University of Maine to provide oversight and support the review of documents.

In FY96, under EPA's Superfund Innovative Technology Evaluation program, the installation demonstrated an innovative emission control system, using a soil vapor extraction system, at the Base Laundry. The University of Maine at Orono and MDEP collaborated on a study of bioventing systems. The RAB worked with the BCT to mitigate community concerns after a fishing advisory was issued for waterways in and around the installation.

Landfill covers were completed at 2 sites, bioventing systems were installed at 8 sites, Interim Actions were completed at 15 sites, and numerous USTs were removed. PCB cleanups were initiated at an underground transformer site and for the base drainage system.

Four Records of Decision (ROD), including the installation's first ROD for groundwater, were signed, documenting cleanup decisions for 31 sites. A corrective action plan (CAP) was submitted to the state regulatory agency to address fuel-related contamination from numerous fuel tank sites. Remedial Investigation and Feasibility Study (RI/FS) activities for basewide groundwater and surface drainage OUs neared completion.

FY97 Restoration Progress

The installation implemented a decision for remediation of the surface drainage OU. The installation also initiated the cleanup plan for the pipeline from the installation to Searsport. Early Removal Actions took place at OU5 and at two pump houses in OU10. The accelerated fieldwork techniques of geoprobe and an on-site laboratory were employed at the installation.

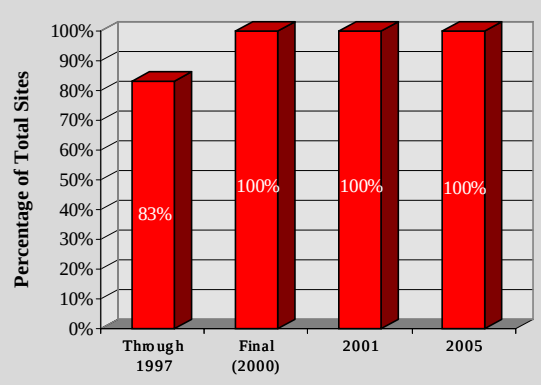
To expedite document review, the installation implemented an on-board review process. This process expedited site characterization for the CAP on the former fuel pipeline and accelerated work plan implementation for basewide surface drainage remediation.

RODs have not been completed for all sites, and the BCT has agreed to delay FS completion of basewide groundwater, pending completion of a pilot study that is needed because of new site information at the base quarry.

Plan of Action

- Complete RODs for remaining sites in FY98
- Complete RA for basewide surface drainage OU in FY98
- Complete the RI/FS for basewide groundwater OU in FY98
- Begin Site Closeouts in FY98
- Complete construction of cover at Landfill 3 in FY99
- Complete ROD for basewide groundwater OU in FY99

Sites Achieving RIP or RC Per Fiscal Year



Louisiana Army Ammunition Plant NPL

Size: 14,974 acres
Mission: Maintain an ammunition metal parts manufacturing facility and maintenance or layaway of ammunition production facilities
HRS Score: 30.26; placed on NPL in March 1989
IAG Status: IAG signed in 1989
Contaminants: Oils, grease, degreasers, phosphates, solvents, metal plating sludges, acids, fly ash, TNT, RDX, and HMX
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $50.2 million
Estimated Cost to Completion (Completion Year): $13.1 million (FY2023)
Final Remedy in Place or Response Complete Date: FY2000

Doyline, Louisiana

Restoration Background

Sites identified at the Louisiana Army Ammunition Plant include lagoons, burning grounds, and landfills contaminated with explosives and plating wastes. Seven sites were identified during a Preliminary Assessment and Site Inspection in FY78, and a preliminary Remedial Investigation and Feasibility Study (RI/FS) was completed in FY82. The installation initiated full-scale RI/FS activities at four of the seven sites in FY85. The studies identified no off-site contamination; however, groundwater monitoring wells at the installation were contaminated with explosive compounds, such as TNT, RDX, and HMX.

The potential for off-site migration of contaminants required groundwater monitoring beyond the northern and southern boundaries of the installation. Groundwater monitoring at the installation and beyond its boundaries has continued until the present.

Between FY89 and FY90, the installation incinerated almost 102,000 tons of explosives-contaminated soil and treated more than 53 million gallons of contaminated water. Between FY88 and FY90, the lagoons underwent RCRA closure and were revegetated. The installation must monitor the vegetated protective cap and maintain it regularly to ensure its integrity.

The Army identified two additional sites in FY93 and FY94. The first of those sites, the Y-Line Etching Facility, may be contaminated with chromium and solvents. Soil and groundwater at the second site, the Load-Assemble-Pack Lines, may be contaminated with explosives. In FY95, the installation began the RI at the Load-Assemble-Pack Lines and completed the RI at the Y-Line Etching Facility.

In FY94, the Army completed a 5-year review of the Interim Remedial Action at the Area P lagoons, evaluating the effectiveness of interim measures. The findings of the review confirmed that the source of the contamination had been removed.

The installation's technical review committee meets quarterly to exchange information about the cleanup program, to assist in the review and approval of documents, and to discuss ongoing restoration progress, Remedial Design, and report preparation.

The installation established a partnership with the U.S. Army Corps of Engineers Waterways Experiment Station to study the feasibility of using natural attenuation to treat groundwater contaminated with explosives.

In FY96, the installation received approval from EPA for the Record of Decision concerning soil at the first seven sites. A separate operable unit will address the installationwide groundwater. In addition, the installation completed the first phase of the RI at the Load-Assemble-Pack Lines and began the FS for the Y-Line Etching Facility.

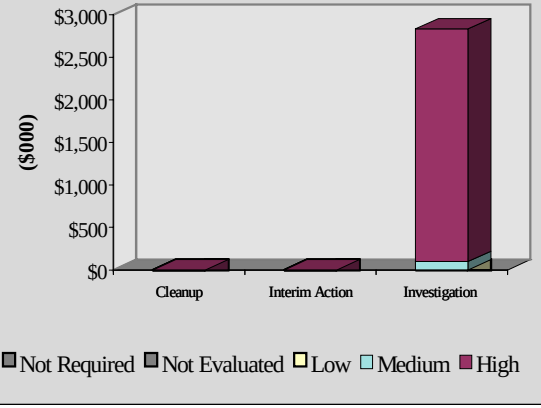
FY97 Restoration Progress

The installation completed the RI/FS for the Y-Line Etching Facility. The RI/FS determined that there was no risk from contaminated soil at the site. A no-further-action ROD is planned for 1998. The groundwater, however, is contaminated with trichloroethene. Remedial options for the contaminated groundwater will be developed under the sitewide groundwater operable unit.

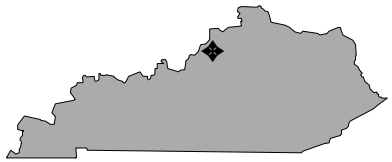
Plan of Action

- Continue investigating the Load-Assemble-Pack Lines in FY98 and complete the RI Ecological Risk Assessment
- Complete an investigation of the groundwater operable unit in FY99
- In FY99, complete an evaluation of the effectiveness of natural attenuation for treating groundwater contamination

FY98 Funding by Phase and Relative Risk



Size: 152 acres
Mission: Overhaul ships; procure and produce weapons systems and components; perform engineering designs; and support research, development, and testing
HRS Score: NA
IAG Status: None
Contaminants: Heavy metals, solvents, cyanide, and petroleum/oil/lubricants
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $2.6 million
Estimated Cost to Completion (Completion Year): $30.8 million (FY2005)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2000



Louisville, Kentucky

Restoration Background

In July 1995, the BRAC Commission recommended the closure of the Louisville Naval Surface Warfare Center (NSWC). Appropriate functions, along with personnel, equipment, and support, will be relocated, primarily to three Naval Activities: Naval Shipyard Norfolk, Virginia; NSWC Port Hueneme, California; and NSWC Crane, Indiana.

Operations that may have contributed to contamination at the installation include machining, welding, draining of lubricating fluids, painting, electroplating, degreasing and cleaning of metals, and paint stripping. Site types include waste storage and disposal areas, manufacturing operations and disposal areas, and other miscellaneous support and maintenance activity areas. Contaminants have migrated into nearby soil and local surface water and groundwater.

In FY86, the installation was issued a RCRA Part B permit that included requirements for corrective action before an initial RCRA Facility Assessment (RFA) was conducted. A Preliminary Assessment (PA) identified five sites. Two sites continued to the Site Inspection (SI) phase, with the remaining site requiring no further action. In FY91, another site was added (Site 6, Building E plating shop). In late FY95, the installation awarded a contract to complete an Environmental Baseline Survey (EBS) and to develop a BRAC Cleanup Plan.

During FY96, the installation established a restoration advisory board (RAB) and an information repository. The installation also completed its community relations plan and assembled an Environmental Restoration Management Alliance (ERMA) team. The ERMA will serve as a BRAC cleanup team and establish a partnership with state and federal regulatory agencies.

A local reuse committee was formed and developed a land reuse plan during FY96. By FY97, approximately 80 percent of the installation's acreage had been transferred to private entities. A finding of suitability to lease was completed.

Also during FY96, the installation released a final EBS Report and conducted a basewide RCRA Facility Investigation (RFI). Results of the EBS and the RFA were combined to identify solid waste management units (SWMU) and areas of concern (AOC). The installation also completed a final RFA and identified 69 SWMUs and 18 AOCs. Confirmatory sampling was recommended for 33 SWMUs and 14 AOCs, but none of the potential SWMUs or AOCs were included in the restoration program.

FY97 Restoration Progress

The installation completed several restoration activities, including the decontamination of SWMU 7 (a less-than-90-day storage area) and cleanup, repairs, and upgrades at eight SWMUs and AOC K. Work is in progress to repair breaks in the combined sewer system, AOC I. The installation anticipates completing 2,262 samples for the RFI in December 1997. Use of a geoprobe, a local laboratory, and aerial photographs by a local business helped expedite site characterization and fieldwork.

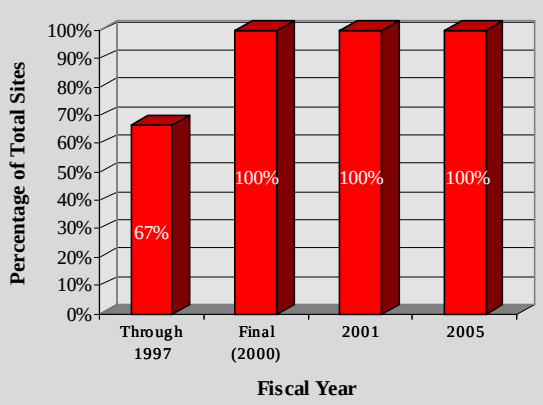
A Tier II Partnering Team, created with the Commonwealth of Kentucky, has allowed elevation of points of conflict from Tier I. The RAB is active in investigative efforts in the field. Seminars are conducted on various aspects of environmental investigation and remediation requirements. Regulatory agencies have concurred in the designation of 75 acres as uncontaminated.

In lieu of the Round 1 RFI Report (scheduled for completion in FY97), the Navy will submit a findings report in early FY98, as well as an RFI Report after the Round 2 investigation.

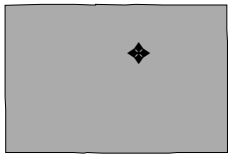
Plan of Action

- Prepare a findings report in FY98
- Transfer and identify sites for the restoration program in FY98
- Complete the corrective measures study for SWMUs in FY98
- Conduct Round 2 field sampling and prepare draft RFI Report in FY98
- Prepare a final RFI Report for Round 2 investigations in FY98
- Apply risk-based cleanup criteria and assess natural attenuation parameters in FY98

Sites Achieving RIP or RC Per Fiscal Year



Size: 1,866 acres
Mission: House the 3400th Technical Training Wing; served as a technical training center
HRS Score: NA
IAG Status: IAG under negotiation
Contaminants: Waste oil, general refuse, fly ash, coal, metals, fuels, VOCs, solvents, and petroleum hydrocarbons
Media Affected: Groundwater and soil
Funding to Date: $35.0 million
Estimated Cost to Completion (Completion Year): $30.2 million (FY2003)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2000



Denver, Colorado

Restoration Background

In July 1991, the BRAC Commission recommended closure of all but 7 acres of this base. The installation was closed in September 1994. The last 7 acres were closed in September 1997.

Sites identified in previous investigations include fire training areas, landfills, a fly ash disposal area, coal storage yards, and underground storage tanks (UST). Petroleum hydrocarbons, metals, volatile organic compounds (VOC), and solvents are contaminating groundwater and soil. Interim Remedial Actions (IRA) included removal of 20 USTs, removal of free product from the water table, closure of off-base wells, operation of an in situ bioventing system, and construction of an aboveground bioremediation land treatment area. In FY94, the installation began a RCRA Facility Investigation and a basewide groundwater investigation to determine the extent of trichloroethene (TCE) contamination.

In FY95, the installation completed fieldwork for a facility assessment and conducted Phase II site assessments for eight UST sites. The installation began IRAs involving placement of extraction wells at the boundaries of the installation to intercept the TCE groundwater plume and installation of bioventing systems at two petroleum-contaminated sites. Dual-phase vapor extraction is being used at the source of the TCE groundwater plume. The installation also demonstrated a technology that uses a reactive treatment wall to intercept TCE-contaminated groundwater. A Focused Feasibility Study was conducted to characterize a landfill before closure activities.

The installation's technical review committee was converted to a restoration advisory board, and a BRAC cleanup team (BCT) was formed. The Environmental Baseline Survey (EBS) identified 1,649 acres as environmentally suitable for transfer. Of these acres, 1,509 are considered CERFA-clean, but the installation has not received regulatory concurrence on those designations.

During FY96, the BCT conducted concurrent document reviews and used field screening data to expedite decision-making. The BCT coordinated budget programming through participation in peer reviews and reviews of project costs to ensure cost-effective use of BRAC funds. The facility assessment, fieldwork for 18 areas of concern, and Phase I of the basewide groundwater investigations were completed. Actions included initiation of Remedial Investigations (RI) of five study areas and long-term monitoring and operation and maintenance of bioventing systems at two UST sites. In addition, the installation completed removal of all USTs and construction of the hydraulic containment system for the TCE plume.

FY97 Restoration Progress

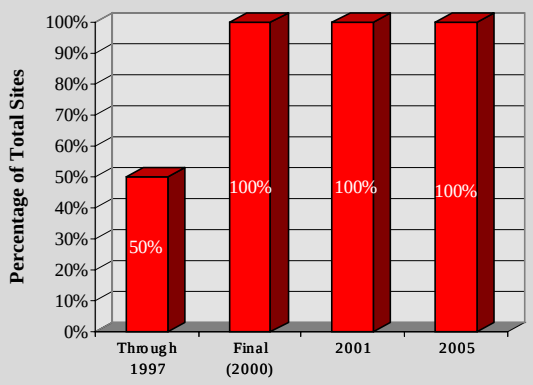
A Local Redevelopment Authority (LRA) road project was used to cap a part of a former coal storage yard. Two hundred and seven acres were deemed transferable by the BCT and deeded to the LRA for residential redevelopment. Second-level site assessments were accomplished. The EBS for the BRAC 95 parcel was completed, and the Environmental Impact Statement was initiated. The Remedial Design (RD) for Landfill OU2 was completed. Final definition of groundwater contamination (OU5) was accomplished. The hydraulic containment system began operation, and an interim response (Source Reduction Area project) for OU5 was placed under construction. Final actions at the Flash Disposal Area (OU3) were completed, and the Air Force is pursuing a no-further-remedial-action-planned designation with the regulators. The cleanup of contaminated soil and storage tanks at the Auto Body Shop (OU4) was started.

Activities scheduled for completion in FY97 have been rescheduled for FY98 and FY99. The installation is awaiting a decision on the landfill RA from HQ AFBCA.

Plan of Action

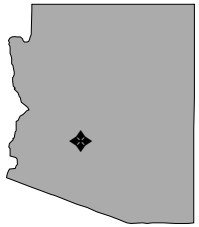
- Complete second-level site assessments in FY98 at removed -UST locations
- Complete the dual-phase vapor extraction system at the TCE source area in FY98
- Complete FSs at three sites and initiate RA, if warranted, in FY98
- In FY98, initiate RAs in additional areas where necessary
- Complete FS at the Landfill Zone in FY98
- Determine suitability for transfer and transfer approximately 500 acres in FY98
- Complete mercury and radiation testing in FY98
- Initiate RD for remainder of coal storage yard
- Split OU5 sites into separate FS documents in FY99
- In FY99, complete the RI/Feasibility Study (FS) for basewide groundwater investigations and begin determining whether further Remedial Actions (RA) are required
- Begin RA construction and conduct closure activities at the Landfill Zone in FY99

Sites Achieving RIP or RC Per Fiscal Year



Luke Air Force Base NPL

Size: 4,198 acres
Mission: Provide advanced F-16 fighter training
HRS Score: 37.93; placed on NPL in August 1990
IAG Status: Federal Facility Agreement signed in September 1990
Contaminants: Petroleum/oil/lubricants, waste solvents, waste oils, general refuse, lead, and chromium
Media Affected: Groundwater and soil
Funding to Date: $18.0 million
Estimated Cost to Completion (Completion Year): $1.4 million (FY2004)
Final Remedy in Place or Response Complete Date: FY1999



Glendale, Arizona

Restoration Background

Historically, Luke Air Force Base provided advanced training to fighter pilots. The current mission of the 56th Fighter Wing, the host unit at the installation, is to provide combat crew training for F-16 aircraft personnel in addition to aircraft maintenance, training, and engineering support.

A Preliminary Assessment completed in FY82 and a basewide Site Inspection completed in FY85 identified 31 sites, which were later consolidated into two operable units (OU). Site types include fire training areas, disposal trenches, landfills, spill sites, and surface drainage canals. Soil is the primary medium affected. Petroleum/oil/lubricants, waste solvents, and waste oils have been identified in disposal trenches and in the fire training areas.

Interim actions conducted at the installation have included removal of three underground storage tanks, use of soil vapor extraction (SVE) to clean up contaminated soils at the North Fire Training Area, and stabilization of the bank of a landfill adjacent to the Agua Fria River.

In late FY91 and early FY92, the installation completed the final Remedial Investigation and Feasibility Study (RI/FS) work plans and field sampling plans. In FY92, an Interim RI Report for OU1 and a Final RI Report for OU2 were submitted to, and approved by, the regulatory agencies. In FY93, a new site at the fuel handling area was discovered and added to OU1. In late FY93, a Final FS Report was submitted to, and approved by, EPA and the state regulatory agency.

In FY94, the installation completed RI fieldwork and submitted a draft report to the regulatory agencies. A Record of Decision (ROD) for OU2 was signed directing the cleanup of one site by soil bioremediation, and the continuing maintenance and inspection for 30 years of a concrete cap at another site.

In FY94, EPA suspended the laboratory that had analyzed RI samples because of deviations from acceptable quality control practices. EPA's audit of the RI data and suspension of the laboratory delayed completion of a ROD for the installation; however, cleanup activities at OU1 were not delayed.

In FY95, the installation completed construction for the Phase I Remedial Action at OU2. The installation also began a Treatability Study of bioventing at OU1.

A technical review committee was formed and converted to a restoration advisory board (RAB), which includes 24 members representing the community. The installation has an agreement with EPA and the state regulatory agency to perform a Focused Feasibility Study of such generic remedies as soil bioremediation, SVE, and institutional controls.

During FY96, the RAB reviewed and commented on the ongoing programming and budget execution plans. RAB members visited a site at which an internal combustion engine (ICE) SVE technology was in use and received a briefing on the operation. Also in FY96, soil at OU2 was composted to treat contamination with benzo(a)pyrene located off-base and soil was sampled to support a Phase II Remedial Design for composting on-base contamination. The installation deployed an ICE for SVE cleanup of soil contaminated with jet fuel in the bulk fuels storage area of OU1.

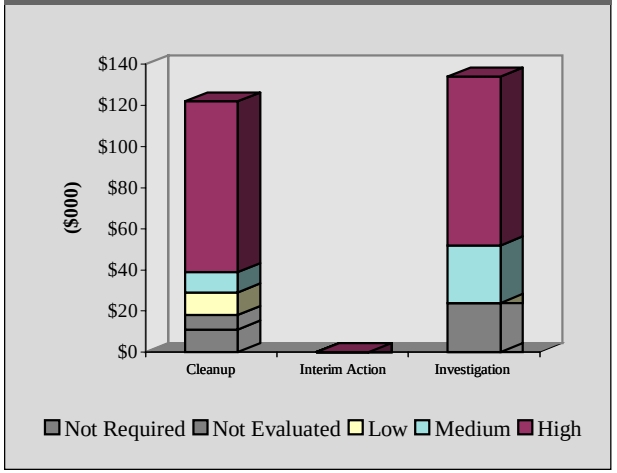
FY97 Restoration Progress

Remediation of contamination at OU2 was completed in July 1997. ICE SVE and geoprobe technology accelerated fieldwork. A meeting with EPA and the state, facilitated by the Air Force Regional Environmental Office, helped resolve issues between regulatory agencies.

Plan of Action

- Complete implementation of ICE SVE at OU1 and complete remediation of the site by FY98
- Complete the Final RI Report in FY98
- Complete the FS Report and sign a ROD for OU1 in FY98

FY98 Funding by Phase and Relative Risk



Malta Rocket Fuel Area

NPL

Size: 165 acres
Mission: Tested rocket engines and exotic rocket fuels
HRS Score: 33.62; placed on NPL in July 1987
IAG Status: IAG signed in 1990
Contaminants: VOCs
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $2.7 million
Estimated Cost to Completion (Completion Year): $0.02 million (NA)
Final Remedy In Place or Response Complete Date: NA

Malta, New York

Restoration Background

Malta Rocket Fuel Area operated as a testing facility for exotic rocket fuels and rocket engines. Its primary site types include aboveground storage tanks, underground storage tanks, dry well areas, and surface disposal areas. Environmental studies have identified volatile organic compounds (VOC)-contaminated groundwater and sediment at the Formerly Utilized Defense Site (FUDS) property.

In FY89, EPA issued a Unilateral Consent Order to eight potentially responsible parties (PRP). In FY90, the state of New York, DoD, and a private corporation entered into an Interim Participation Agreement to conduct the Remedial Investigation and Feasibility Study (RI/FS). The RI, completed in FY93, identified two VOCs, trichloroethene (TCE) and carbon tetrachloride, as the primary contaminants of concern in the groundwater. EPA recommended additional investigation under the RI, including test pit excavations, which were conducted in late FY93. In FY94, the U.S. Army Corps of Engineers (USACE) completed additional RI activities and submitted a revised RI report to EPA for review.

In FY95, the participating parties addressed EPA's comments, completed the RI Report, began FS activities, and submitted a draft FS Report to EPA for review. In addition, PRPs completed the removal of two gas cylinders and drums, and USACE awarded a contract for completing a PRP Search Report.

In FY96, the PRP Search Report was completed. USACE then formulated DoD's position and made recommendations to the Department of Justice. Participating PRPs completed the FS Report.

FY97 Restoration Progress

Based on the technical advice and recommendations provided by USACE, the Department of Justice concluded negotiations with other PRPs for DoD's share of liability. Settlement documents are being routed for final approvals.

Plan of Action

- Complete PRP project in FY98
- In FY98, on completion of the PRP project, refer site to the New York District for evaluation of the need for further actions

FY98 Funding by Phase and Relative Risk

All sites are in the long-term monitoring phase.

Size: 6,545 acres
Mission: Maintain, repair, and refuel aircraft
HRS Score: 31.94; placed on NPL in November 1989
IAG Status: Federal Facility Agreement signed in September 1990
Contaminants: VOCs, petroleum/oil/lubricants, and PCBs
Media Affected: Groundwater and soil
Funding to Date: $131.6 million
Estimated Cost to Completion (Completion Year): $37.0 million (FY2019)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY1998

Riverside, California

Restoration Background

In July 1993, the BRAC Commission recommended that March Air Force Base undergo realignment. It was also recommended that the installation serve as an Air Reserve Base once realignment has been completed. Base realignment was accomplished in April 1996.

Environmental studies at March Air Force Base began in FY84. During a Preliminary Assessment and Site Inspection, 28 sites were identified at the installation, including three fire training areas, seven inactive landfills, several underground storage tanks (UST), an engine test cell, sludge drying beds at a sewage treatment plant, and various spill sites.

In FY90, an Engineering Evaluation and Cost Analysis and a Removal Action were conducted to prevent the off-base migration of contaminated groundwater. The installation also initiated a Removal Action for the Panero hydrant refueling system and began treatment of contaminated soil. In FY91, sites were grouped into three operable units (OU) to assist in investigation and cleanup. In FY92, a groundwater extraction and treatment system plan was implemented to prevent further migration of groundwater contamination off base.

In FY94, generic remedies, including modified RCRA caps and stream modifications, were initiated at some landfill sites, in conjunction with removal of debris and centralization of waste. Two innovative treatment technologies were demonstrated at the installation through the EPA Superfund Innovative Technology Evaluation program. These technologies involved use of modified vapor extraction and recovery systems to clean up contaminants in soil and groundwater.

In FY95, Removal Actions were conducted at five sites, and two landfills were closed. Soil from several landfills was excavated as part of the on-site landfill consolidation project. A soil vapor extraction pilot system was installed at Site 31 (Solvent Spill), and an air sparging system was installed at Site 18 (Engine Test Cell). The installation continued long-term monitoring at OU1 and OU3.

In FY94, the technical review committee was converted to a restoration advisory board (RAB), and the installation completed its Environmental Baseline Survey. In FY95, both the RAB and the Local Redevelopment Authority (LRA) were involved in the reuse process at the installation and attended a briefing on the Relative Risk Site Evaluation process.

A Record of Decision (ROD) for OU1 was signed in FY96. Remedial Actions (RA) involving construction of a dual-phase treatment system for groundwater trichloroethene (TCE) contaminated soil began for Site 31 and the related groundwater plume at OU1. Six landfill sites on the western portion of the base were cleaned up. The debris was consolidated at Site 6, allowing the LRA unrestricted use of an additional 100 acres. Soil removal was conducted at Site 12. Interim Removal Actions (IRA) were completed at Site 25 and continued at two sites within the flight line.

FY97 Restoration Progress

The draft final Remedial Investigation and Feasibility Study (RI/FS) was submitted, and the Proposed Plan and ROD for OU2 were completed. The Remedial Design was initiated for a combined treatment facility for Sites 2, 8, and 27. The IRA at Site 30 was completed.

Indicator analytes were used in groundwater sampling to expedite site characterization. The Groundwater Technical Group participated in partnering efforts and held quarterly meetings. Annual RAB training was conducted.

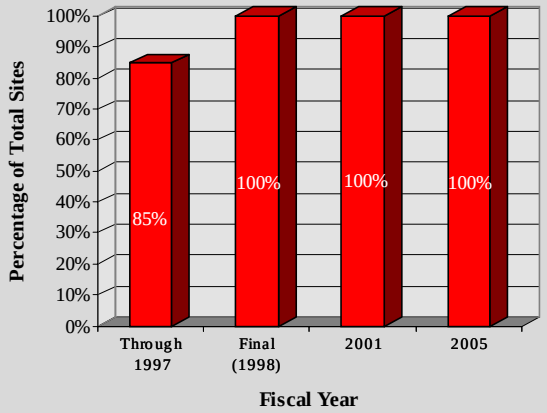
The BRAC cleanup team approved the RI/FS for OU2, six RAs, and the decision document for OU3. It also held a public meeting for OU2.

Some activities scheduled for completion in FY97 were delayed because funds were not provided early enough in the fiscal year.

Plan of Action

- Submit the draft basewide RI/FS in FY98
- Complete basewide RI/FS approval in FY98
- Approve ROD for OU2 in FY98
- Approve basewide Proposed Plan in FY98
- Continue to hold quarterly RAB meetings in FY98
- Complete the ROD for OU3 by FY99

Sites Achieving RIP or RC Per Fiscal Year



Size: 5,460 acres
Mission: Maintain and repair ships and provide logistical support for assigned ship and service craft
HRS Score: NA
IAG Status: Federal Facility Agreement signed in September 1992
Contaminants: Heavy metals, VOCs, PCBs, pesticides, petroleum hydrocarbons, lead oxides, and unexploded ordnance
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $42.5 million
Estimated Cost to Completion (Completion Year): $115.0 million (FY2004)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2004

Vallejo, California

Restoration Background

In July 1993, the BRAC Commission recommended closure of Mare Island Naval Shipyard and relocation of the Combat Systems Technical School's Command Activity to Dam Neck, Virginia. The BRAC Commission recommended that the installation's family housing be retained to support Naval Weapons Station Concord. The installation closed on April 1, 1996.

Environmental studies since FY80 have identified 28 sites and 20 solid waste management units at this installation. Sites 1 through 24 have been divided into three operable units (OU) on the basis of the type or location of the contamination and other available information.

The installation completed a Preliminary Assessment (PA) for 15 sites in FY83. In FY88, the installation completed a Site Inspection (SI) for one site and initiated Remedial Investigations and Feasibility Studies for 23 sites. In FY90, the installation completed an initial site characterization (ISC) for one underground storage tank (UST) site. In FY91, SIs were completed for 12 sites and PA/SIs were completed for 6 sites. The installation completed an Interim Remedial Action (IRA) for one site in FY93. In FY93, the installation completed IRAs for six UST sites. In FY94, ISCs were completed for seven UST sites. In FY94, Removal Actions were completed for two sites. The installation also completed a land reuse plan in FY94. The plan includes an open recreational area, offices and light industrial areas, residences, heavy industrial areas, historic districts, and neighborhood centers.

In FY95, the installation initiated Removal Actions for five sites and completed a Removal Action for one site. The installation also began to develop corrective action plans for eight UST sites. The installation also completed an Environmental Baseline Survey, which designated 500 acres of property as CERFA-clean.

During FY96, the installation's BRAC cleanup team (BCT), which was formed in FY94, reviewed cleanup schedules, completed a Time-Critical Removal Action for one site, initiated Removal Actions for two sites, initiated a Record of Decision for no further action for one site, and completed Removal Actions for three sites and the Defense Reutilization and Marketing Office Scrapyard.

The installation formed a technical review committee in FY90 and converted it to a restoration advisory board (RAB) in FY94. The RAB has 25 members and meets monthly. An administrative record and an information repository were established in FY90. The installation completed its community relations plan in FY92 and updated it in FY94.

The BCT negotiated a Memorandum of Understanding (MOU) with the city of Vallejo, the U.S. Fish and Wildlife Service, and the Navy. The MOU outlined the requirements for the cleanup program and a Habitat Conservation Plan. The installation completed a BRAC Cleanup Plan in FY94, revised it in FY95, and updated it in FY96.

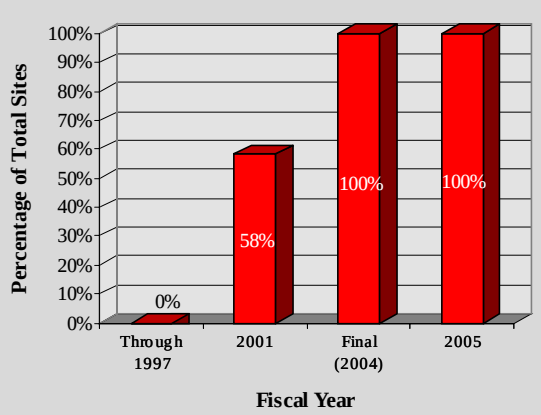
FY97 Restoration Progress

A Removal Action was initiated for one site. USTs were removed, and those UST sites require no further action. The installation instituted a thermal desorption demonstration project for polychlorinated biphenyls (PCB) and employed accelerated fieldwork techniques such as magnetometer, geometrics, geoprobe, and an on-site field laboratory. In FY97, the installation hosted a RAB public site tour and open house.

Plan of Action

- Complete Removal Action for one site in FY98
- Complete lead oxide removal action in FY98
- In FY98, accelerate cleanup through use of an integrated schedule combining all elements to transfer property
- Complete unexploded ordnance removal in FY99
- Install landfill cap by FY00

Sites Achieving RIP or RC Per Fiscal Year

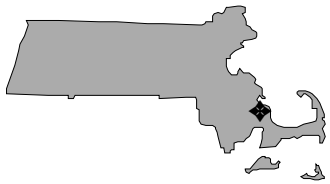


Massachusetts Military Reservation

Otis Air National Guard Base and Camp Edwards

NPL

Size: 22,000 acres
Mission: Provide Army and Air National Guard training and support the East Coast Air Defense and Coast Guard Air and Sea Rescue Units
HRS Score: 45.93; placed on NPL in November 1989
IAG Status: Federal Facility Agreement signed in April 1992, and amended in June 1995.
Contaminants: Waste solvents, emulsifiers, penetrants, photographic chemicals, and VOCs
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: $184.7 million
Estimated Cost to Completion (Completion Year): $563.2 million (FY2022)
Final Remedy in Place or Response Complete Date: FY2009



Falmouth, Massachusetts

Restoration Background

Environmental studies have identified 79 sites at the installation. Site types include chemical and fuel spill sites, storm drains, landfills, former fire training areas, coal yards, and more than 180 underground drainage structures. Contamination resulting from activities at the installation has affected an estimated 66 billion gallons of groundwater. Private and municipal wells in the vicinity of the installation were closed after off-base migration of groundwater contamination was detected.

Since FY90, the installation has conducted several cleanup actions. Removal Actions for six sumps associated with the underground drainage structures were conducted in FY91. Contaminated liquids and sediment from these drainage structures were removed and disposed of properly.

In early FY93, a groundwater extraction and treatment system was installed to contain a contaminant plume migrating from a former motorpool and storage yard. Additional Remedial Investigation and Feasibility Study work also began in FY93.

In FY94, an Interim Remedial Action (IRA) was conducted at the largest of four landfills. This IRA involved capping the landfill to reduce infiltration of surface water. The Installation Restoration Program also began a soil treatment project under which thermal desorption was used to treat more than 22,000 cubic yards of contaminated soil from several sites at the installation.

In FY95, partnerships were established with Rice University and the University of Waterloo Center for Groundwater Research to demonstrate innovative technologies at the installation, including reactive wall treatment technology. In October 1995, an air sparging system was implemented to remove subsurface soil contamination at Fuel Spill Site 12.

In June 1996, the strategic plan delineating the cleanup strategy for the reservation was accepted by the appropriate regulatory agency and other stakeholders. In April 1997, the Federal Facility Agreement was amended to include the plume response schedule and enforceable milestones of the strategic plan.

During FY96, 74 community stakeholders were interviewed, and their comments were used in a draft community involvement plan (CIP).

Ongoing restoration activities in FY96 included the continual identification of remedial sites and the cleanup of 20,000 tons of contaminated soil. More than 180 underground drainage structures have been removed. A private-well testing program was initiated to identify replacement drinking water supplies for the neighboring community of Bourne. New monitoring wells were installed for a hydraulic performance evaluation of a groundwater extraction and treatment system.

FY97 Restoration Progress

The installation continued to remove underground drainage structures and conducted thermal treatment of contaminated soil, which led to final remediation and closure of Fire Training Area 1. A computer model for the groundwater extraction and treatment system was developed, and pilot testing of recirculation wells was initiated at three locations. In addition, fieldwork techniques such as on-site laboratories and sampling techniques, sonic geophysical analysis, and microwells for ecological studies were implemented.

The reactive wall pilot program continued and included drilling and sampling of monitoring wells to establish background plume conditions. Furthermore, the CIP was revised and issued for public comment.

For the Air Force, regulators, and community members to reach consensus on remediation of four plumes, a decision-criteria response action and schedule program was used. Issues not resolved at lower levels were forwarded for resolution through a tiered management structure with representatives from all agencies. Remedial project managers from the Air Force and regulatory agencies developed a protocol for expediting document review.

The reactive wall pilot test was delayed because of equipment and scheduling problems with the subcontractor. The CIP will be finalized upon official acceptance of new charters for the various advisory teams.

Plan of Action

- Continue to refine and utilize modeling tools in FY98
- Install two reactive walls and ealuate effectiveness in FY98
- Remove small source areas of limited soil contamination and design source area remediation in FY98
- Achieve Response Complete at 10 sites and work with state regulators to achieve 25 Site Closeouts
- Continue to update the CIP and finalize it in FY98
- Address four groundwater plumes and have treatment systems in place by FY99

FY98 Funding by Phase and Relative Risk